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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,429	08/26/2003	Yosuke Inomata	81872.0050	4541

26021 7590 09/29/2006

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EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,429

Applicant(s)

INOMATA ET AL.

Examiner

Allan Olsen

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,8-10,15 and 21-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,8-10,15 and 21-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/30/06 9/1/06, 1/23/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 23, 2006 has been entered.

Allowable Subject Matter

The indicated allowability of claims 8-10 and 15 is withdrawn for reasons set forth in the following rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

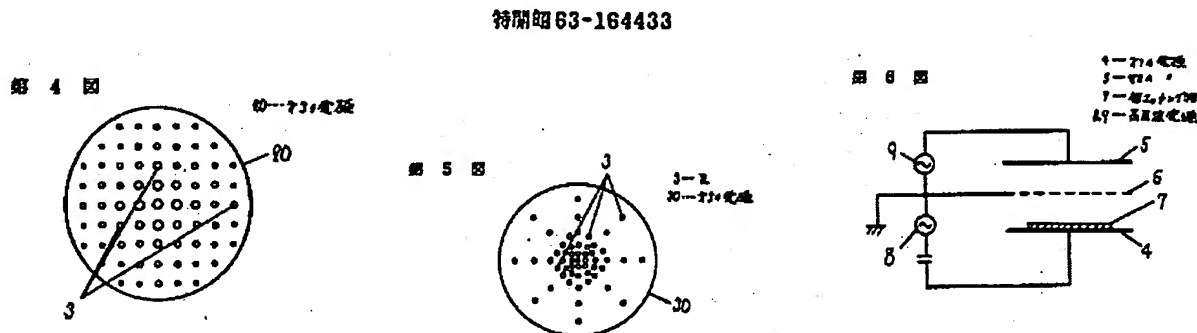
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 10, 15, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,661,203 issued to Smith et al. (hereinafter, Smith).

Smith teaches reactive ion etching through a standoff shadow mask. Smith teaches the distance, h , between the mask and the substrate being etched can be twice the size, d , of the largest aperture in the mask, (i.e., $h = 2d$). Applicant's claim 8 encompasses $h=1/2d$ which is the same as Smith's $h = 2d$. Figure 2 shows a mask with chamfered apertures.

Claims 1, 3, 4, 21, 23-25, 27-29 and 32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 63164433.

See figures 4-6 (shown below).

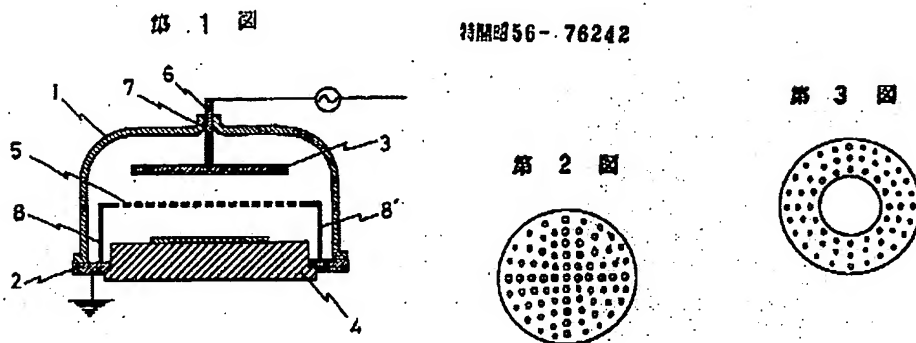


With respect to the limitations of claims 21 and 25 that pertain to the trapping and deposition of reaction etching products, the examiner notes considers these aspects of the claimed invention to be inherent features of JP 63164433. It is noted that applicant's specification indicates that the degree of entrapment is a function of several parameters. While the extent of entrapment may be reduced under certain circumstances it stands to reason that etching products will inherently be trapped, with or without a plate being placed over the substrate being etched. When etching a substrate, with or without an overlying plate, it is inevitable that some amount of etching residue will be deposited upon the substrate being etched. Etching residue that is deposited on a substrate can be viewed as being trapped and such deposits are known to occur even in the absence of an overlying plate.

Art Unit: 1763

Claims 1, 3, 4, 21, 23-25, 27-29 and 32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 56076242.

See abstracts and figures 1-3 (shown below).



With respect to the limitations of claims 21 and 25 that pertain to the trapping and deposition of reaction etching products, the examiner notes considers these aspects of the claimed invention to be inherent features of JP 63164433. It is noted that applicant's specification indicates that the degree of entrapment is a function of several parameters. While the extent of entrapment may be reduced under certain circumstances it stands to reason that etching products will inherently be trapped as a result of placing a plate over a substrate being etched. In fact, when etching a substrate, with or without an overlying plate, it is inevitable that some amount of etching residue will be deposited upon the substrate being etched. Such etching residue that is deposited on a substrate can be viewed as being trapped and such deposits are known to occur even in the absence of an overlying plate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56076242.

The above noted teachings of JP56076242 are herein relied upon.

JP56076242 does not teach spacing the apertured plate at a distance of between 5 and 30 mm from the substrate.

It would have been obvious to one skilled in the art to optimize the spacing between the shutter and the substrate to achieve the desired results.

Claims 2, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63164433.

The above noted teachings of JP63164433 are herein relied upon.

Art Unit: 1763

JP63164433 does not teach spacing the apertured plate at a distance of between 5 and 30 mm from the substrate.

It would have been obvious to one skilled in the art to optimize the spacing between the shutter and the substrate to achieve the desired results.

Claims 8-10 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,695,564 issued to Imahashi.

Imahashi teaches a plasma process wherein a plate with holes is placed over the substrate. Imahashi teaches the separation between the plate and the substrate is between about 10 and 20 mm. Imahashi teaches the plate contains many small holes. See column 12, lines 12-24.

"The upper electrode 91 is situated above the support surface of the table 74 at a distance of about 10 to 20 mm therebetween. The upper electrode 91 is made hollow and a process gas supply pipe 92 is connected to the hollow portion of the electrode 91. A predetermined process gas, e.g. an etching gas such as CF₄, is introduced through the supply pipe 92 from a process gas source 93 via a mass flow controller (MFC) 94. A baffle plate 95 having many small holes for facilitating uniform diffusion of the process gas is situated in a middle region of the hollow part of the upper electrode 91. A process gas introducing member 97 formed of a plate member having many small holes 96 as process gas jet holes is provided below the baffle plate 95."

Imahashi does not teach the claimed ratio between the diameter of the hole and the separation distance between the plate and the substrate.

It would have been obvious to one skilled in the art to use hole having a diameter of less than or equal to $\frac{1}{2}$ the separation distance because given Imahashi's teaching of a separation distance of between 10 to 20 mm, this would correspond to the plate having holes with a diameter less than or equal to from between 5 to 10 mm. The

Art Unit: 1763

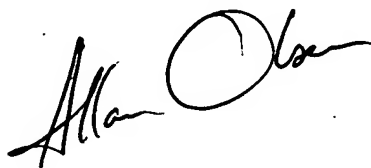
examiner takes Official Notice that the diameter of holes in baffle plates such as that taught by Imahashi are typically on the order of 1 mm which is much smaller than the upper limits of 5 mm and 10 mm.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M, W and F: 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Allan Olsen', with a large, stylized 'O'.

Allan Olsen
Primary Examiner
Art Unit 1763